

REMARKS

Claims 13-32 are pending in the application. Claims 1-12 were canceled by way of the Preliminary Amendment dated January 24, 2002.

Rejections under 35 U.S.C. § 103(a)

Claims 13-32 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,060,574 to Schmalstieg et al. (hereinafter "Schmalstieg") in view of U.S. Patent No. 4,001,232 to Groegler et. al. (hereinafter "Groegler"). The Examiner alleges that it would have been obvious to employ the catalyst of 2,3-dimethyl-3,4,5,6-tetrahydropyrimidine as the catalyst of Schmalstieg, since Schmalstieg specifically refers to the compounds of Groegler as a suitable catalyst. Applicants respectfully disagree.

The present invention is directed to a solventless reactive system, which is curable at room temperature. The system includes

- A) a polyisocyanate that contains at least one organic polyisocyanate having a molecular weight of 168 to 25,000 where at least 95 mole % of the NCO groups are reversibly blocked with at least one hydrocarbon resin containing phenolic OH groups and having a hydroxyl group content of 0.1% to 10.0%.
- B) at least one organic amine having at least 2 primary amino groups,
- C) an oxirane compound containing more than one epoxy group per molecule and
- D) a catalyst comprising 2,3-dimethyl-3,4,5,6-tetrahydropyrimidine.

Schmalstieg discloses a reactive composition containing A) an organic polyisocyanate having a number average molecular weight of 168 to 25,000, where the isocyanate groups are reversibly blocked with a hydrocarbon resin containing phenolic OH groups, B) at least one organic polyamine having at least two primary amino groups and C) optionally a compound containing oxirane groups. The composition can include 2-methyltetra-hydropyrimidines which are substituted in the 1-position, which can be obtained as described in DE-A 2,439,550 (Groegler) by reacting N-monosubstituted 1,3-propane diamines with acetoacetic acid derivatives.

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Groegler discloses a process for preparing 1-substituted, 2-methyltetrahydropyrimidine by reacting an N-substituted propylene diamine with an acetoacetic acid ester or amide. The 1-substituted group can be a straight-chain, branched-chain or cyclic, saturated, unsaturated or aromatic, optionally substituted hydrocarbon radical with from 1 to 17 carbon atoms.

In the present invention, Applicants sought to provide reactive systems curable at room temperature, based on blocked polyisocyanates, polyamines and compounds with oxirane groups, which provide a uniform film and do not suffer from odor problems (see specification page 3, lines 24-28). Applicants were able to achieve their objective by way of the claimed solventless reactive system, an essential feature of which is that only with the help of 2,3-dimethyl-3,4,5,6-tetrahydropyrimidine as catalyst can the reaction of epoxy resin/amine and blocked isocyanate/amine be adjusted so that the solventless reactive system is curable at room temperature and produces a uniform film at room temperature (page 12, lines 11-15 of the specification).

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. MPEP § 2142 quoting In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

In general, the Examiner has identified a reference that describes reactive systems that include blocked polyisocyanates, polyamines and epoxy resins and combined it with a reference that disclose various laundry lists of potential catalysts that may be used in curing the reactive systems.

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With regard to the catalysts, Schmalstieg discloses the broad class of 2-methyltetra-hydropyrimidines substituted in the 1-position as described in Groegler. Groegler discloses 1-substituted, 2-methyltetrahydropyrimidine where the 1-substituted group can be a straight-chain, branched-chain or cyclic, saturated, unsaturated or aromatic, optionally substituted hydrocarbon radical with from 1 to 17 carbon atoms.

The Examiner suggests that because Schmalstieg cites Groegler that there is a reasonable likelihood of success that 2,3-dimethyl-3,4,5,6-tetrahydropyrimidine will reduce the reaction temperature or time and that Groegler does not provide a laundry list of potential catalysts. Applicants respectfully request that the Examiner reconsider this position.

Beginning with Schmalstieg, the following laundry list of potential catalysts is disclosed at col. 5, lines 13-43:

Suitable catalysts are preferably compounds containing basic nitrogen atoms, such as tertiary amines or Mannich bases and preferably amidines. Particularly preferred catalysts include optionally substituted, alkyl aralkyl or aryl groups which carry amidine bases. The CN double bond in the amidine structure may be either part of an open-chain molecule or a constituent of a cyclic or bicyclic system, or may also be located outside the ring in a compound with a ring system. Mixtures of these amidines are also suitable.

Suitable amidine catalysts in which the CN double bond is part of an open-chain molecule include N,N-dimethyl-N'-phenyl-formamidine and N,N,N'-trimethyl-formamidine, which may be prepared as described, e.g., in Chem Ber. 98, 1078 (1965). Examples of suitable amidines in which the CN double bond is a constituent of a cyclic system include 2-methyltetra-hydropyrimidines which are substituted in the 1-position. They can be obtained in accordance as described in DE-A 2,439,550 by reacting N-monosubstituted 1,3-propane diamines with acetoacetic acid derivatives. Also suitable are monocyclic amidine bases, which may be obtained in accordance with DE-A 1,078,568 by reacting the carbamoyl chlorides of secondary amines with lactams. Suitable catalysts in which the CN double bond is located outside a ring system include imines of N-alkyl-

substituted lactams, such as 2-methylimino-1-methylpyrrolidone, which may be prepared as described in Chem. Ber. 101, 3002 (1968).

Bicyclic amidines, e.g., those described in EP-A 662,476, such as 1,5-diaza-bicyclo[4.3.0]non-5-ene (DBN), can also be used according to the invention.

From this long laundry list of catalysts, the Examiner has chosen one specific species, 2-methyltetra-hydropyrimidines which are substituted in the 1-position as disclosed in DE-A 2,439,550 (Groegler).

Groegler discloses 1-substituted, 2-methyltetrahydropyrimidines where the substituted group can be a straight-chain, branched-chain or cyclic, saturated, unsaturated or aromatic, optionally substituted hydrocarbon radical with from 1 to 17 carbon atoms. From this multitude of possibilities, the Examiner has selected 2,3-dimethyl-3,4,5,6-tetrahydropyrimidine.

Thus, the Examiner was presented a very large list from which to choose a potential catalyst, at least hundreds of potential optionally substituted, alkyl aralkyl or aryl groups which carry amidine bases (the Examiner's cited disclosure at col. Col. 5, lines 15-17 of Schmalstieg) and hundreds of potential 1-substituted, 2-methyltetrahydropyrimidines from Groegler. The possibility of choosing a single species from Schmalstieg, i.e., those disclosed in Groegler, and then picking a specific compound 2,3-dimethyl-3,4,5,6-tetrahydropyrimidine has to approach one in a million.

Applicants continue to assert that the Examiner has chosen a single catalyst from a large laundry list within a laundry list. Applicants note that "a 'laundry list' disclosure of every possible moiety does not constitute a written description of every species in a genus because it would not 'reasonably lead those skilled in the art to any particular species.'" MPEP § 2163 quoting Fujikawa v. Wattanasin, 93 F.3d 1559, 1571, 39 USPQ2d 1895, 1905 (Fed. Cir. 1996).

Further, although the cited art discloses structures that encompass the claimed catalyst, they do not disclose or in any way suggest that the claimed catalyst would be particularly effective at providing a solventless reactive system that does

not exhibit odor problems, is curable at room temperature, and produces a uniform film at room temperature.

The Examiner cites a single example in Schmalstieg to identify a system that includes a polyisocyanate blocked with an aromatic blocking agent, an epoxides resin, and a diamine, which hardened "overnight". The Examiner supplements this disclosure with the broad possibility that any of the catalysts disclosed in Groegler could have been used in the example, although no catalyst was used, because of the general suggestion at col. 5, lines 25-30 that catalysts according to Groegler could be used in the invention. However, there is no suggestion of the unique properties of the specific catalyst of the presently claimed invention and the unique properties it provides and there is no suggestion or motivation in any of the references to suggest to one of ordinary skill in the art to pick the catalyst in the present invention.

Applicants assert that without improperly using the claimed invention as a template, there is no suggestion or motivation in either rejection to make the suggested modifications to arrive at the claimed invention.

Secondly, neither of the cited references, either alone or in combination, directs one skilled in the art to use the specifically claimed components in combination with the single claimed catalyst. Based on the cited prior art combinations, there is no reasonable expectation of success for providing reactive systems that are curable at room temperature, based on blocked polyisocyanates, polyamines, compounds with oxirane groups, and the claimed catalyst, and which provide a uniform film and do not suffer from odor problems.

Finally, the disclosed references provide no guidance that would allow one skilled in the art to narrow the field of catalysts to the specifically claimed species.

Why would a skilled artisan have picked just the presently claimed catalyst to be used with the specific blocked polyisocyanates, amines and oxirane compounds? What guidance has the Examiner put forth from the cited references that one skilled in the art could have concluded that the presently claimed combination is especially good? The Examiner has not provided any basis to select the particularly claimed catalyst.

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The combination of Schmalstieg and Groegler, does not provide any disclosure, suggestion or motivation to use the claimed 2,3-dimethyl-3,4,5,6-tetrahydropyrimidine as the catalyst in the claimed solventless reactive system with the expectation of obtaining reactive systems curable at room temperature, which provide a uniform film and do not suffer from odor problems. Therefore, Claims 13-32 are not obvious over the cited combinations of references and the rejection under 35 U.S.C. § 103(a) should be withdrawn.

Claims 13-32 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent Nos. 4,753,826 to Lauman (hereinafter "Lauman") and 6,153,709 to Xiao et al. (hereinafter "Xiao") in view of Schmalstieg, JP 50-117771, and U.S. Patent Nos. 4,908,408 to Boutillier et. al. (hereinafter "Boutillier") and 6,486,256 to Tarbutton et al. (hereinafter "Tarbutton"). The Examiner alleges that it would have been obvious to use the 2,3-dimethyl-3,4,5,6-tetrahydropyrimidine of JP 50-117771 and Tarbutton as the catalyst of Lauman and Xiao in order to optimize the reaction rate and/or temperature and to improve the load durability and impact resistance. Applicants respectfully request reconsideration.

Applicants submit herewith a Declaration Under 37 C.F.R. § 1.131 by Jörg Tillack, one of the present inventors and an English-language translation of priority document German Patent Application No. 199 35 325.5 as evidence that Applicants had possession of and moved forward with seeking patent protection of the present invention without undue delay prior to the publication of JP 50-117771. Thus, JP 50-117771 is not a valid prior art reference.

Because JP 50-117771 is no longer available as prior art, the Examiner has not provided a *prima facie* case of obviousness and the rejection of claims 13-32 over Lauman, Schmalstieg, Xiao, Boutillier, Tarbutton, and JP 50-117771 should be withdrawn.


CONCLUSION

Applicants respectfully request that the present response be entered in the application, if for no other reason than to place the application in better form for appeal.

Applicants respectfully request reconsideration of the rejections as the teaching, motivation or suggestion to make the claimed solventless reactive system and the reasonable expectation of success are not found in the applicable combined references.

In view of the above remarks, reconsideration of the rejections and allowance of claims 13-32 are respectfully requested.

Respectfully submitted,

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